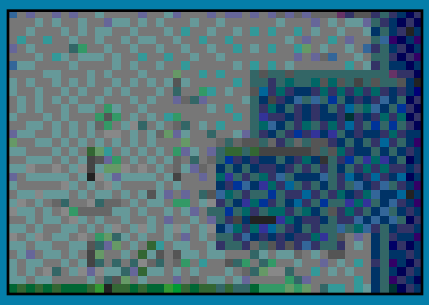
Automated Systems & Related Services

U.S. Patent and Trademark Office



The front cover, with its collage of historic and modern patents and its overlay of trademarks, symbolizes the role of the U.S. Patent and Trademark Office throughout U.S. history. The inset shows the latest desktop workstation displaying a patent for a new DNA molecule.

Photos of patent models on the internal pages show actual models on display at the U.S. Patent and Trademark Museum.

The principal benefits of the automated patent and trademark systems are the improved effectiveness of the patent and trademark award decisions and the increased accessibility of patent and trademark information by the general public. These derive directly from having more complete data available for searching and having it readily accessible to all authorized users. The systems that enable the realization of these benefits are described in this brochure, together with their related information services.

The United States Patent and Trademark Office

Automated Systems and Related Information Services

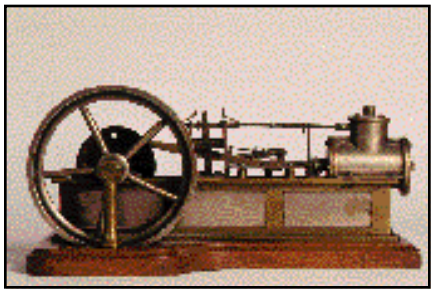
Mission and History

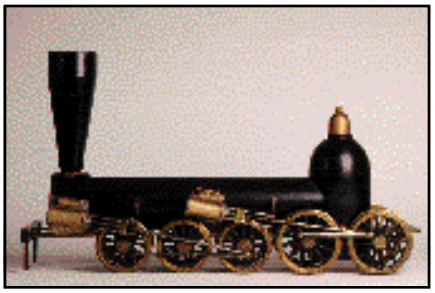
THE Mission of the United States Patent and Trademark Office (PTO) is derived from the U. S. Constitution, which says "The Congress shall have the power … to promote the progress of science and the useful arts, by securing for limited times to … inventors exclusive right to their … discoveries."

The PTO administers the laws relating to patents and trademarks to promote industrial and technological progress in the United States and to strengthen the national economy. It accomplishes its mission by examining patent and trademark applications, issuing patents, registering trademarks, disseminating patent and trademark information to the public, and encouraging a domestic and international climate in which intellectual property can flourish.

The PTO occupies modern offices in a 17-building campus located in Arlington, Virginia. The offices are linked by local area networks that furnish office automation services and provide authorized access to centralized computer resources including one of the largest text and image databases in the world. The patent text database, including indexes, contains 136 gigabytes of character data on 2.1 million patents issued since 1971; the patent image database holds nearly 2.9 terabytes of compressed bit-mapped data on 6.1 million patents issued since 1790. The trademark database contains 4.5 gigabytes of text data on over 2 million marks and 2.4 gigabytes of image data on 650,000 designs. New patents are added at an average rate of 2,250 per week. Trademarks grow at a rate of approximately 1,000 per week.

The automation of patent and trademark processing began in the 1970s with early versions of the Patent Application Location and Monitoring (PALM) and the Trademark Reporting and Monitoring (TRAM) systems, which provide workflow tracking and status reporting for patent and trademark application files respectively.





When the Automated Patent System (APS) began in April 1984, it was one of the largest and most technically challenging automation programs in the Federal Government.

Automated searching of patents and trademarks has become routine in the years since 1984, and currently some 275,300 patent search statements and 131,000 trademark search statements are processed by the automated systems each month.

In addition to U.S. patents, Japanese and European patent information is routinely searched through the use of English language abstracts of 3 million Japanese patents and 1.1 million European patents. This information is searchable in conjunction with a database of worldwide “patent family” information.

Automation of trademark information has grown to include automated photocomposition of the *Trademark Official Gazette* and trademark registration certificates. These improvements eliminate rekeying of the data, improve workflows, and reduce the total time needed to process an application.

The Patent and Trademark Assignment System (PTAS) maintains records of patent and trademark property ownership changes and related information. It has the distinction of being the first paperless processing system at PTO.

Throughout the history of automation at PTO, the capabilities of the Patent and Trademark automated systems have been continually enhanced to meet growing user requirements and to reflect steadily improving technology. As technological advances have been made, the PTO has taken advantage of these advances by progressively upgrading system hardware and software. Plans are in place to continue this forward-looking approach into the 21st century.

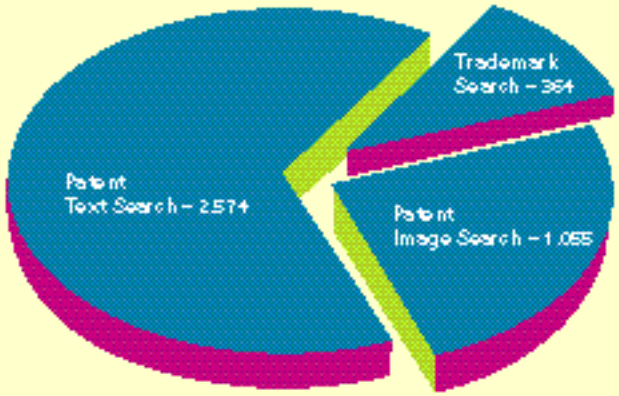
Users

Users of the automated systems include the following:

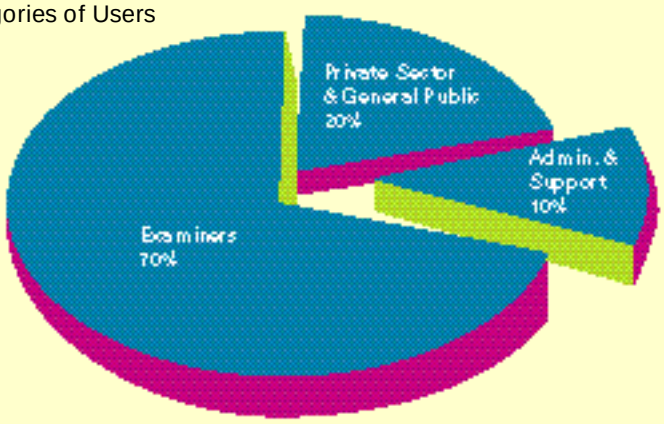
- Examiners, who seek to establish whether the patent or trademark being applied for is unique and qualified for award, or is sufficiently close to existing patents or marks to be disqualified.
- Private Sector Patent or Trademark Attorneys and Their Clients, who want to ensure that their patent or trademark application has a high probability of being awarded, or who seek to discover or verify possible infringement of a patent or trademark they previously received.
- General Public, who wish to search and browse the files for a variety of business or personal reasons, or who purchase bulk data for repackaging and distribution.
- Administrative and Support Personnel, who monitor and maintain the systems.

Users in a Typical Month – January 1997

Users of Search System



Categories of Users



Access

Access to the automated systems is becoming more convenient. Patent examiners can access the patent text search and text retrieval capabilities from their desktops. Patent image retrieval is done both on desktop machines and workstation clusters. As the desktop machines become larger and faster, image retrieval will become increasingly convenient directly from the examiner's desktop. All trademark examiners have access to trademark search and retrieval from desktop computers.

Automated access to patent and trademark information is available to private sector business users and the public through a number of channels:

- Patent Search Room, located on the lobby level of the Crystal Plaza 3 building in Crystal City (Arlington), VA.
- Patent Search and Image Retrieval Facility, located in the Crystal Mall 1 building in Crystal City (Arlington), VA.
- Patent and Trademark Depository Libraries (PTDLs), located at 81 sites throughout the United States and Puerto Rico. Twenty-eight of the PTDLs subscribe to the automated text search system. Two PTDLs (Sunnyvale, CA and Detroit, MI) also have access to the patent image retrieval system and to the trademark search system.
- Trademark Search Library, located in the South Tower building in Crystal City (Arlington), VA.
- Trademark Voice Box System, which allows users to dial in and receive status information on pending applications and pending registered marks.
- Private Commercial Sources that obtain patent and trademark information from the PTO and repackage it for release in various formats.

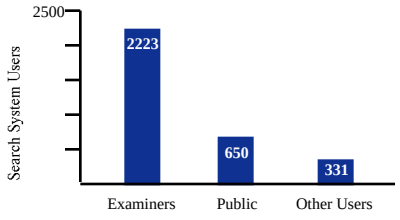
Use of the Systems

The use of the three main search systems—patent text search, patent image search, and trademark search—reflects the acceptance of the automated systems by the examiners and strongly declares the success of the systems. In a recent typical month, the following levels of usage and growth were achieved, as shown in the bar graphs.

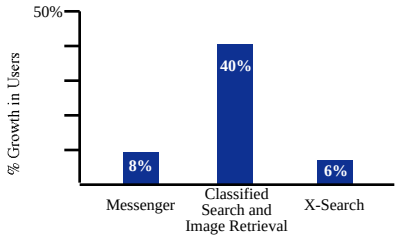
The search systems have consistently performed better than their required levels while handling large and steadily increasing numbers of transactions from escalating numbers of users and expanding databases.

Search System Usage and Growth for a Typical Month – January 1997

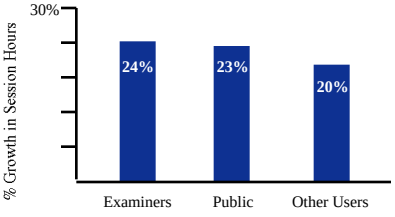
Individual Users of Search Systems



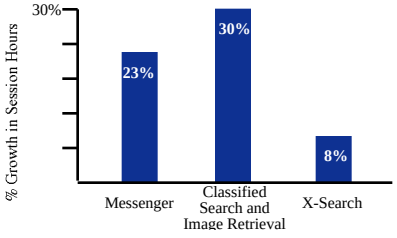
12-Month Growth in Users by Search System



12-Month Growth in Usage by Type of User



12-Month Growth in Usage by Search System



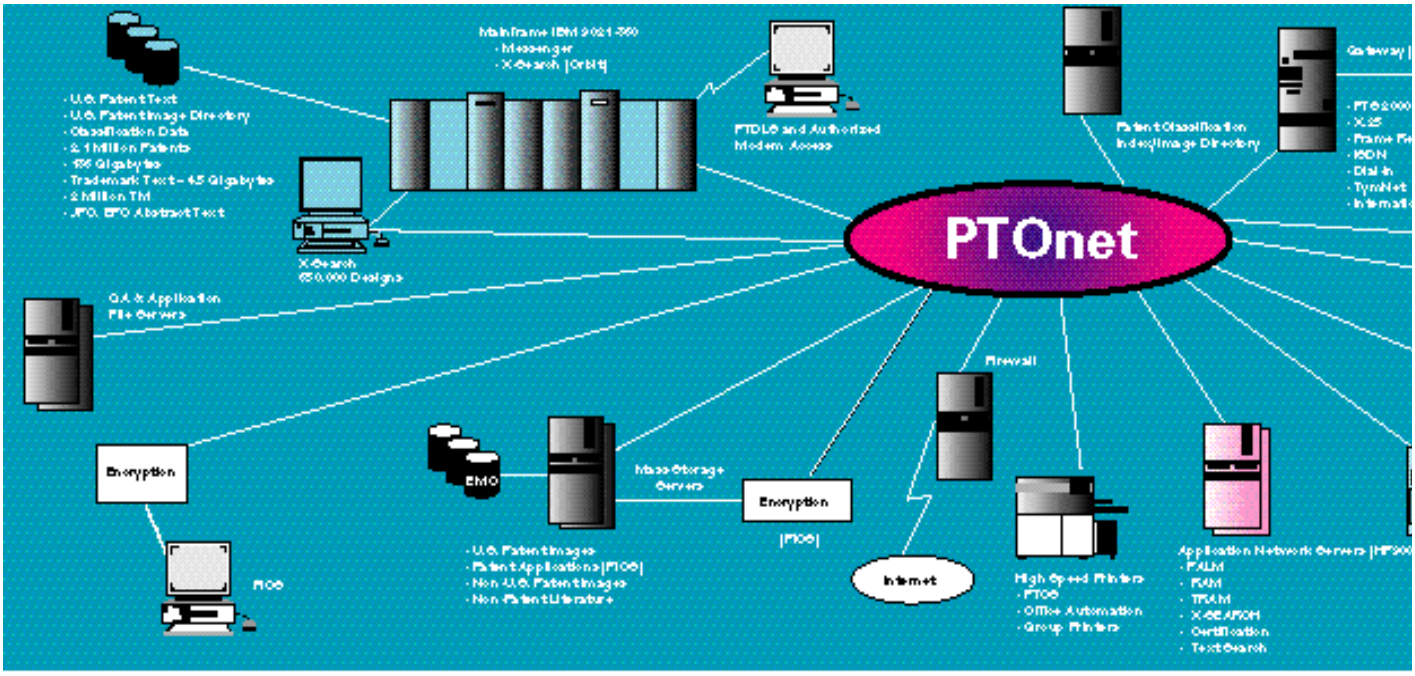
Architecture

The architecture of PTO automated systems, shown in the diagram, is based on a distributed system design in a campus environment with over 5,000 nodes. There is an external access capability for patent text searching from PTDLs and other authorized users and for trademark and patent image searching from two PTDLs. The present mainframes and associated devices are planned to be phased out as new client-server devices are installed throughout PTO. Already, high-speed magnetic disks organized as RAIDs (redundant arrays of independent disks) have replaced the aging optical disk storage devices.

The major hardware components of the automated systems are as follows:

- PTOnet – a comprehensive end-to-end data transmission facility linking servers, workstations, shared printers, and PCs in the PTO. It is a multi-ring network providing logical connectivity and network services to more than 5,000 customers of office automation products, and access to PTO's business applications and databases throughout the 17-building campus.
- Mainframe IBM 9021-860 Enterprise Server – hosts the Messenger patent text search system and the X-search trademark text search system. Its disk storage contains patent text, the patent image directory, trademark text, and patent classification data. It connects to the 28 PTDLs that subscribe to the text search service. This mainframe and its associated disk storage are planned for phaseout as their functions are transferred to network servers.
- Patent Classification Index/Image Directory – will house the classification index and image directory when they are phased off the mainframe.
- Gateway – provides access to a variety of commercial databases that examiners use to search the scientific and popular literature. It will eventually provide access to other data communication services including frame relay, ISDN, Dial-in, TymNet, and International Interfaces.
- Mainframe UNISYS A-16 – hosts the workflow tracking and status reporting systems for patents

Current PTO System Architecture



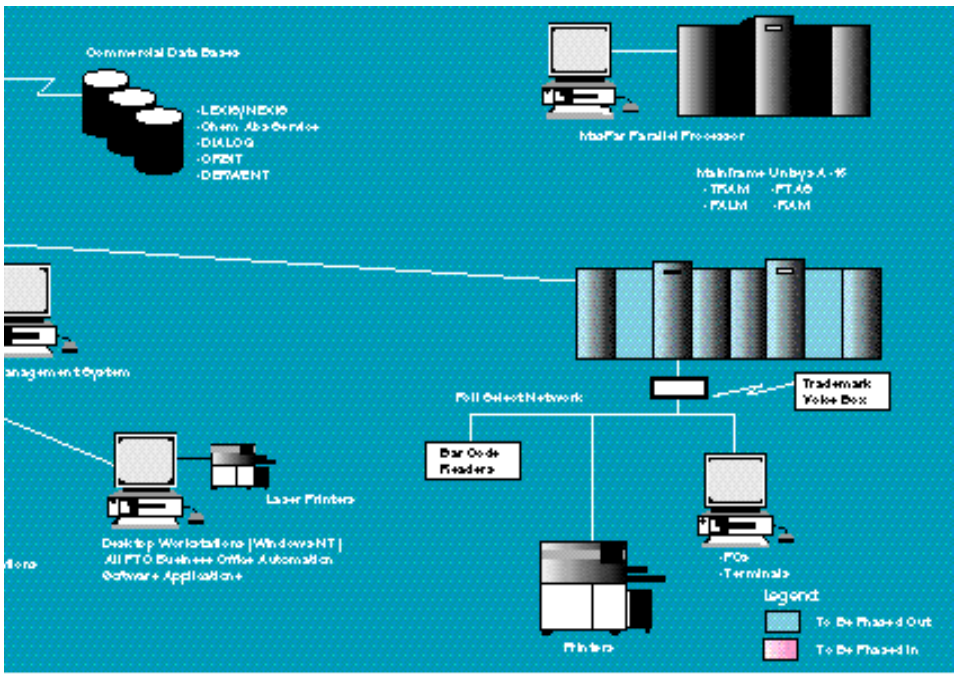
(PALM) and trademarks (TRAM), which use input from the barcode readers to record prosecution history and track status and location of the applications. It hosts the Revenue Accounting Management (RAM) System, the Trademark Voice Box status reporting system, and the Poll/Select function, which is a critical administrative reporting protocol that collects data from the barcode readers and maintains links to a number of PCs, terminals, and printers. The network handles 4 million transactions per month with a response time of 1.3 seconds.

- Network Management System – provides management and control services for the PTOnet.

- Desktop Workstations – provide desktop capabilities for text search, all office automation applications, and access to PTO databases. They operate on Windows NT and provide data entry capabilities for PALM, TRAM, and PTAS, as well as text editing for TRAM and PTAS. All present desktop units will be converted to desktop workstations.

- Image Workstations – dual screen units deployed in clusters for text searching and image retrieval. Their large screens allow full-page display of the patent page. These units are planned for phaseout when the desktop workstations are fully deployed.

- Application Network Servers – HP 9000 servers that will host applications such as PALM, TRAM, X-Search, certification, and text search and will eventually replace the mainframes.



- High Speed Printers – high speed laser printers that support high volume printing requirements from examiners and from sales to the public. (Other, lower speed laser printers are connected directly to the workstations.)

- Internet Firewall – allows public limited access to information on patent/trademark application status and enables examiners to access the extensive internet information resources and use internet e-mail.

- Mass Storage Servers – provide access to high-speed magnetic disks organized as RAIDs, which store patent images, patent applications, non-U.S. patent images, non-patent literature, and other PTO databases. These will eventually store additional system files as they are phased off the mainframes.

- Patent Image Capture System (PICS) – uses encryption to provide necessary security to protect the sensitive nature of patent applications moving between specific devices.

- File Servers – used in a variety of ways. For example, they:
  - store files for users on the network, such as word processing files, search results, etc.
  - provide office automation applications
  - support X-Search text and image searches
  - support PTAS
  - act as gateways to other systems.

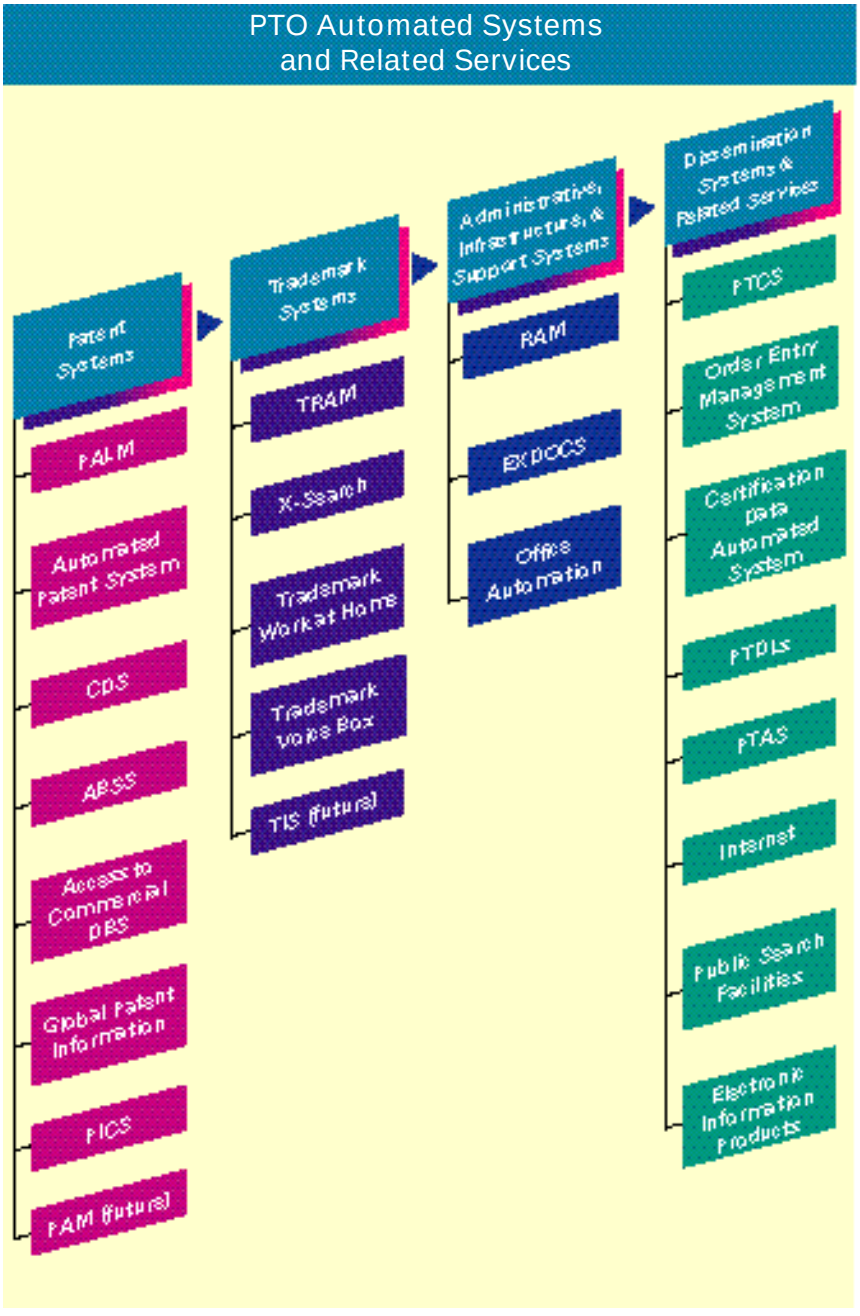
- MasPar Parallel Processor – supports the Automated Biotechnology Search System as a standalone system.

Software

The software of the PTO automated systems is discussed in the following four groupings:

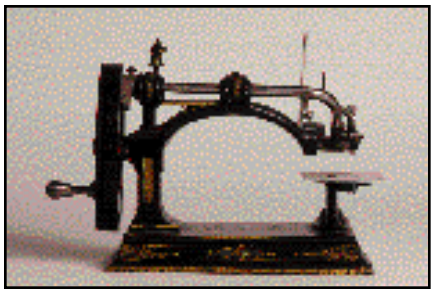
- Patent Systems
- Trademark Systems
- Administrative, Infrastructure, and Support Systems
- Dissemination Systems and Related Services

The systems and related services are identified in the following diagram and explained in the subsequent short descriptions.



Patent Systems

There are seven current systems and one future system associated with the automated processing of patents.



PALM (Patent Application Location and Monitoring) System is a workflow tracking and status reporting system for patent application processing. PALM records the prosecution history of each application and provides current application file location, status, title, legal representation, and other information.

APS (Automated Patent System) – The APS includes four main programs that provide text searching and image retrieval for the patent database:

- Messenger Text Search – Messenger, a licensed product of CAS (formerly Chemical Abstract Service), is a sophisticated text search system that performs full text searches of the 2.1 million patents issued since 1971.
- APS Messenger Text Load – The text loading process builds the 136 gigabyte character database. The database contains the machine-readable text file, the full text index, proximity operators, and the indexes of searchable fields.
- APS CSIR (Classified Search and Image Retrieval) enables rapid retrieval and browsing of patent document images for any of the 6.1 million patents issued since 1790, based on patent numbers or technology classifications.
- APS Image Load – The image load process builds the image index and loads two copies of each patent on optical disks—one of high resolution with near-line access and one of lower resolution with on-line access. The image database is nearly 2.9 terabytes in size.

CDS (Classification Data System) – CDS maintains current classification data for all patents.

ABSS (Automated Biotechnology Sequencing System) – The ABSS stores and provides searching functions for DNA and RNA sequences that are the subject of patent applications. It uses massively parallel processing techniques to examine all possible combinations of sequences.

Access to Commercial Databases – External commercial databases of general and scientific literature are routinely accessed by examiners as part of their searches.

GPI (Global Patent Information) – The GPI application is designed to provide access with a single query to a number of patent databases including U.S. patents, Japanese first-page data, European first-page data, and worldwide “patent family” data.

PICS (Patent Image Capture System) – PICS provides for the initial capture, storage, maintenance, retrieval, and printing of digital images of patent applications. High security is employed to protect the sensitive application data.

PAM (Patent Application Management) System is a planned development effort that will accept electronically filed applications, simplify and expedite Patent Examiner actions including interacting with applicants and agents, and manage electronic applications throughout their prosecution history.

Trademark Systems

Four current systems handle the processing, tracking, searching, and publishing of trademark applications and registrations. An additional trademark tracking and management system will enhance processing in the future.

TRAM (Trademark Reporting and Monitoring) System provides workflow tracking, status reporting, location, prosecution history, and bibliographic data on pending trademark applications, active registered marks, abandoned applications, and expired registrations. TRAM also photocomposes the *Trademark Official Gazette* and trademark registration certificates.

X-Search – X-Search supports highly sophisticated trademark searching of over 2 million marks and over 650,000 designs, searches for application or registration information. In the future, this system will support information dissemination activities in the Trademark Search Library.

Trademark "Work at Home" – This pilot project enables trademark examiners to access all services and data available on their desktops from remote microcomputers.

Trademark Voice Box – This is the trademark status line, which is accessible to the public via touch-tone phones. It provides status information on applications and registrations in answer to more than 30,000 calls per month. The Voice Box phone number is listed on the back page of this brochure.

TIS (Trademark Information System) – TIS is a planned development effort to accept electronically filed trademark applications, to convert paper documents to electronic format, to maintain an electronic file for application and registration, to record prosecution history and production information, to provide an improved automated search capability, to photocompose the *Trademark Official Gazette* and registration certificates, and to disseminate trademark information to the public.

Administrative, Infrastructure, and Support Systems

A number of systems and an office automation suite provide support across both patent and trademark areas.

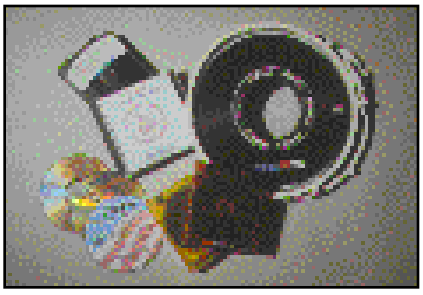
RAM/Revenue Accounting – The RAM system receives application fees and manages deposit accounts.

EXDOCS (Executive Document Management System) – EXDOCS is a future system for the management and tracking of correspondence and other important documents at the office level. It is expected to improve officewide document tracking, streamline the executive document review, correction, and approval process, and improve document standardization.

The Office Automation Software suite includes electronic mail, word processing, spreadsheet, database management, presentation graphics, and other desktop software applications.

Dissemination Systems and Related Services

A variety of access methods and a range of products and services make patent and trademark information available to the public in many ways.



PTCS (Patent and Trademark Copy Sales) – PTCS is a system that processes orders for patent documents based on a fee schedule. It retrieves the desired patent images, prints them, and assembles the orders for mailing. Typically 2,000–3,000 patents (20–30,000 pages) are processed each day.

OEMS (Order Entry Management System) is the place of entry for PTCS. OEMS will in the future become the single point of entry for all Information Dissemination products offered for resale.

CDAS (Certification Data Automated System) – CDAS is the system that provides certified copies of PTO products to customers. Prior to 2000, CDAS will phase out and its functionality will be included in OEMS.

PTDLs (Patent and Trademark Depository Libraries) – Twenty-eight PTDLs currently subscribe to the APS text search and retrieval capability, which provides full text and fielded data searching on patents dating back to 1971. Two PTDLs (Sunnyvale, CA and Detroit, MI) also access the patent image retrieval system and the trademark search system.

PTAS (Patent and Trademark Assignment System) – PTAS maintains records of patent and trademark property ownership changes, security interests, liens, and licenses. PTAS is the PTO's first paperless processing system. It features image capture, on-line scanning and optical character recognition, automated workflow management, and preparation of computer output microfilm.

Internet – The PTO's Web site (http://www.uspto.gov/) provides public information including updated information on collaborative projects, current announcements and pending public hearings, the commissioner's annual report, intellectual property and the National Information Infrastructure, information on patent law changes, and job announcements. Searchable databases provide access to patents related to AIDS research and over 20 years of patent bibliographical text.

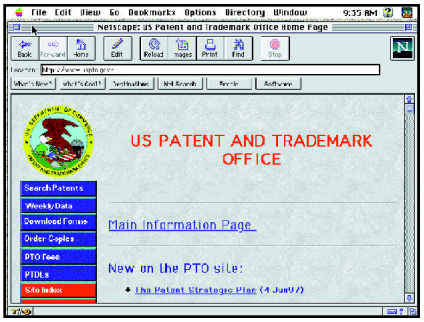
Public Search Facilities – PTO operates several Public Search Facilities in Crystal City (Arlington), Virginia, to provide:

- access to 6.1 million patents indexed by technology classifications (paper files)
- automated full text search and image retrieval capability similar to that used by the patent examiners
- access to over 2 million text marks and 650,000 designs, which may be searched by the same system used by trademark examining attorneys
- information on the current and previous ownership of both patents and trademarks.

Electronic Information Products – PTO prepares numerous electronic information products for sale to the public on CD-ROMs, half-inch magnetic tape (reel or cartridge), and 5-1/4" or 3-1/2" disks. A complete catalog of these products is published by PTO's Information Dissemination Organizations. To obtain a copy please call 1 800 PTO 9199.

The Future PTO Information Technology Environment

For more than a decade the PTO has adopted cutting edge information technology as it has become available. It will do no less in the future. To handle the requirements of its truly massive database, its large number of users, and its high transaction volumes, the PTO will build its future systems on the following principles and features:



- A standards-based open system environment
- Business Process Reengineering
- Solutions based on commercial off-the-shelf products
- Electronic filing and management of applications
- A commercial document management system
- A PTO standard system development life cycle supported by:
  - Automated tools
  - Information engineering methodology
- Improved facilities for dissemination of PTO data to the public via:
  - Electronic access
  - Various products

The strategic direction of PTO automation is to provide an information technology environment, for both the PTO and the public, where patent and trademark information is created once, managed effectively, used often, and evolved over time to electronic commerce, whereby most internal and external transactions are performed electronically. These principles and objectives will build a sound foundation for future systems and provide forward-looking guidance as PTO automation progresses into the 21st century.

PTO contacts

PTO Automation
Chief Information Officer
Crystal Park 2, Suite 1000
Washington, DC 20231
Phone 703 305 9400

Director of System Architecture and Engineering
Crystal Park 2, Suite 1000
Washington, DC 20231
Phone 703 305 9400

Administrator for Information Dissemination
Crystal Park 3, Suite 412
Washington, DC 20231
Phone 703 305 9110

PTO Electronic Products
Office of Electronic Information Products/OEIP
Crystal Park 3, Suite 441
Washington, DC 20231
Phone 703 306 2600

Patent Search Room
Crystal Plaza 3, Room 1A01
Washington, DC 20231
Phone 703 308 0595

Patent Search and Image Retrieval Facility
Crystal Mall 1, Room 1A02
Washington, DC 20231
Phone 703 308 6001

Trademark Search Library
South Tower, Room 2B30
Washington, DC 20231
Phone 703 308 9800

Patent Assignment Search Room
Crystal Plaza 3, Room 2C03
Washington, DC 20231
Phone 703 308 2768

Trademark Assignment Search Room
South Tower, Room 2B30
Washington, DC 20231
Phone 703 308 9800

General Information Services Division
Crystal Plaza 3, Room 2C02
Washington, DC 20231
Phone 1 800 PTO 9199

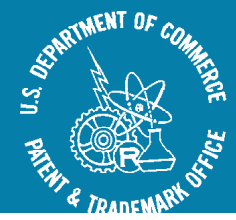
Additional PTO Contact Points

Patent and Trademark Depository Library Program
Phone 703 308 5558

PTO Web Site
http://www.uspto.gov/

Trademark Voice Box
Phone 703 305 8747

Office of Public Affairs
Phone 703 305 8341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